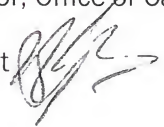


August 23, 2019  
File No. 09219075.21

## MEMORANDUM

TO: Mr. Steven Williamson, City of Miami, Director, Office of Capital Improvements

FROM: Eduardo F. Smith, P.E., Senior Vice President 

SUBJECT: Preliminary Evaluation of Recent Testing  
International Links Melreese Country Club

Pursuant to your request, SCS has reviewed the August 14, 2019 Site Rehabilitation Plan prepared by EE&G and the July 15, 2019 Miami-Dade County Department of Regulatory and Economic Resources, Division of Environmental Resources Management (DERM) letter for the subject site. Both documents provide recent environmental data collected at the site. We also reviewed the findings of other relevant reports provided by the City.

It is our opinion that the new data are generally consistent with historic findings and that the existing institutional and engineering controls provide adequate protection for continued golf course use.

### EXISTING ENGINEERING CONTROLS

The existing engineering controls (EC) were approved by DERM in December 2015 and consist of the following:

- In green spaces, one-foot of soil with no apparent debris, except as otherwise approved by DERM, covered with paspalum grass, which is wear resistant and difficult to penetrate
- Spray-applied binding agent in the sand traps overlain by clean sand
- Approximately 3-4 inches of mulch around trees and landscaping

The golf course operators should conduct routine inspections and maintenance of the ECs in accordance with the DERM-approved Corrective Action Plan.

### SITE REHABILITATION PLAN REVIEW

With respect to the EE&G Site Rehabilitation Plan, below is a detailed discussion of their findings and SCS' interpretation. It is important to note that there are two distinct sources that may have contributed to the arsenic detected at the site. Incinerator ash has a distinct chemical fingerprint containing arsenic, lead and barium at elevated concentrations. This fingerprint is evident in the majority of the deeper (below the EC) sample results in the EE&G report.

The other source of arsenic typically found at golf courses of similar age is suspected to be from arsenical pesticides used in routine turf maintenance (December 2002 DERM Technical Report:

Environmental Quality Monitoring at Five Municipal Golf Courses in Miami-Dade County). The sample results containing arsenic in the surficial soil (top six inches) do not have the incinerator ash fingerprint, and thus are indicative of pesticide application.

## Soil

- EE&G conducted 34 test pit excavations and 38 soil borings. Soil samples were collected from select test pits and from the 38 borings for chemical analyses.
- Surficial soil samples [ground surface to 6-inches below land surface (bls)]: SCS statistically compared the site concentrations to levels reported at other Miami-Dade County golf courses (as referenced in the December 2002 DERM Technical Report: Environmental Quality Monitoring at Five Municipal Golf Courses in Miami-Dade County) and found that the two data sets are statistically similar. Therefore, the concentrations of arsenic reported in the EE&G report are similar to levels identified at other golf courses throughout the county and are as expected on golf courses of similar age.
- Deeper soil samples (below 6 inches bls). In most areas, the EC consists of 12 inches of soil with no apparent debris overlain by paspalum grass. EE&G collected soil samples from 6 inches - 2 feet bls. Their samples span the EC and the underlying soil, which we expect to contain incinerator ash and its associated chemicals. Therefore, these results are not representative of the EC. The deeper soil sample results are consistent with historic results from samples collected from beneath the EC where incinerator ash was identified.
- Solid waste debris was documented by EE&G within the upper foot of soil at several test pit locations. It is SCS' opinion, however, that soil borings provide a more accurate representation of the vertical profile/lithology because they can be collected without material disturbance of the soil column. Soil boring logs were not included in the report, but were subsequently provided by EE&G the evening of August 22, 2019, allowing insufficient time for review. A supplemental report may be provided to the City if needed upon our review of the boring logs.
- EE&G has indicated that the repairs to the EC subsequent to the trenching activities were conducted in accordance with the DERM-approved Corrective Action Plan that stipulates methods for repair and maintenance of the EC. We understand that EE&G will submit to DERM the documentation of the EC repairs. It is possible that DERM will require additional documentation (potentially testing) to demonstrate the EC has been re-established.

## Groundwater

- Arsenic was reported above the groundwater cleanup target level (GCTL) in two locations: southwestern and eastern-central portion of the site. The eastern-central location was consistent with prior findings; the southwestern location was not. SCS expects DERM may require additional monitoring.
- Iron had not previously been identified as a contaminant of concern by DERM; therefore, there had been no prior testing for iron. Iron was reported by EE&G above the GCTL in several wells throughout the site. SCS statistically compared the EE&G concentrations to background levels (as referenced in the December 2005 DERM Memorandum: Background Concentrations of Iron in Groundwater in Miami-Dade County). Based on our initial evaluation, iron appears to be higher

than background concentrations. Therefore, SCS expects DERM may require additional monitoring.

- Ammonia had not previously been identified as a contaminant of concern by DERM; therefore, there had been no prior testing for ammonia. Ammonia was reported above the GCTL in three wells. However, the concentrations are well below the alternative GCTL, which has been previously calculated by SCS and approved by DERM. Therefore, ammonia is not a concern at this site.

### **Methane Gas**

Methane testing had not been required by DERM. The EE&G report identified two areas of elevated methane gas concentrations. While the presence of the methane is not a concern for the golf playing area, additional testing within the clubhouse should be conducted to ensure there is not methane accumulation in the building. The testing can be accomplished with a portable handheld meter. DERM may require delineation of the methane at the property boundary, and testing in the clubhouse.

### **DERM TESTING**

With respect to the findings presented in the DERM letter, SCS recommends implementing verification testing and, if warranted, delineation of the four localized areas of potential concern. If the additional sampling confirms the DERM findings, SCS recommends removing and properly disposing of the impacted soil and returning the excavations to grade with clean fill and paspalum turf.

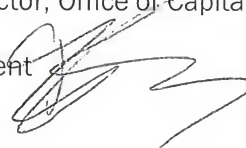
### **RECOMMENDATIONS**

In summary, arsenic concentrations in surficial soil are consistent with levels found at other golf courses throughout the county and are indicative of the application of arsenical pesticides. With respect to buried solid waste and the associated chemicals of concern, it is SCS' opinion that the existing institutional and engineering controls provide adequate protection for continued golf course use and that it can be re-opened.

August 23, 2019  
File No. 09219075.21

## MEMORANDUM

TO: Mr. Steven Williamson, City of Miami, Director, Office of Capital Improvements

FROM: Eduardo F. Smith, P.E., Senior Vice President 

SUBJECT: Methane Screening of Onsite Buildings  
International Links Melreese Country Club

Based on the findings of the August 14, 2019 Site Rehabilitation Plan prepared by EE&G for the subject site, SCS recommended conducting methane screening in the onsite buildings in our August 23, 2019 memorandum. As authorized by the City, SCS staff conducted the screening the same day.

Using a GEM 2000 gas meter, SCS staff conducted a sweep of the onsite buildings, which revealed no methane concentrations.



## Williamson, Steven

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**From:** Williamson, Steven  
**Sent:** Friday, August 23, 2019 3:08 PM  
**To:** Emilio Gonzalez (ETGonzalez@miamigov.com); Napoli, Joe  
**Subject:** FW: Melreese Golf Course

Here's my note to Lorna Bucknor at DERM.

We are currently working with Parks to isolate the one location. It will be completed this afternoon.

Steve

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**From:** Williamson, Steven  
**Sent:** Friday, August 23, 2019 1:17 PM  
**To:** Bucknor, Lorna (RER) <Lorna.Bucknor@miamidade.gov>  
**Subject:** Melreese Golf Course

Ms. Bucknor:

Thank you for the professional discussion earlier today regarding the Melreese Golf Course. I appreciate your time in this matter.

As we discussed, the City retained an independent consultant to review the recently provided material to the City. Earlier this week, we provided a copy of the report to your office. After a preliminary review of this material, we are considering re-opening the golf course today, while isolating the single location identified in our conversation.

Thank you for your willing support over the week.

Sincerely,



**Steven C. Williamson**

*DIRECTOR of Capital Improvements*

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